

Winners and losers in the trading of meme stocks



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Summary

In 2021, Gamestop, a relatively unknown American company, experienced a sudden increase in its stock price. The price increase had been orchestrated by a group of investors who had collaborated via a social media platform and successfully drove up the price of the stock by 1,500 per cent within days. Other stocks, including AMC, had exhibited similar patterns, giving rise to the term "meme stocks" due to the humorous elements found in the online forums where these stocks were discussed.

This study seeks to understand the meme stock event and answer three questions: who participated in these stock trades, who incurred losses, and who made gains.

For Finansinspektionen (FI), which monitors the financial market, understanding such events is essential. The answers to these questions will also provide insights into this specific situation and in more general terms the potential risks associated with speculative trading.

In Sweden, over 130,000 individuals engaged in trading these stocks. The majority were younger individuals, and nine out of ten were men, trading for quite limited amounts. By the end of 2021, most of these individuals had sold all their holdings in the analysed stocks.

The trading results varied: some traders lost a lot of money, while others made substantial gains. The cumulative loss for Swedish investors in Gamestop was nearly USD 8 million. Although the overall result for AMC trading was positive, there were more individuals who lost money than those who made profits. This finding underscores the risks involved with speculating in volatile instruments.

The primary beneficiaries of this trading activity were the stockbrokers, due to the increase in trading of foreign stocks. This is because investors incurred both brokerage and currency exchange fees. While it is natural for brokers to charge a fee for their services, it is crucial for investors to understand the fees associated with their trades.

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The phenomenon of meme stocks

Gamestop is an American business that primarily retails video games and game consoles through brick-and-mortar stores. With the current trend of online gaming and purchasing games via the internet, the demand for physical game stores has significantly declined in recent years. By January 2021, Gamestop's stock had been on a downward trajectory for four years straight, prompting financial analysts to unanimously issue sell recommendations. This led to a high level of interest in short selling the stock among investors. By the end of 2020, the short positions on the stock even surpassed the total market value of the company.

Yet, in January 2021, the previously lesser-known Gamestop stock experienced a dramatic rise in price. This was largely orchestrated by a seemingly small collective of individuals who, using the WallStreetBets discussion forum on Reddit to coordinate their actions, successfully drove up the stock's price. As the stock price soared, the forum discussions began attracting more attention, both from users and the media, leading to an increase in the number of people actively buying the stock to further drive up the price. Many aimed to profit by inflating the price and subsequently selling their holdings, leading to a price increase of over 1,500 per cent within a few days.¹

Following the Gamestop price surge, individuals in the Reddit group proposed driving up the prices of other stocks, one of which was AMC, an American company that operates movie theatres. As the pandemic severely reduced cinema attendance, AMC's stock had significantly depreciated. Both Gamestop and AMC shared a common characteristic in that a large portion of their outstanding shares had been shorted (see the explanatory box below for more on shorting).

A theory that was circulating within the group was that if they could elevate the stock prices, the potential losses for those who had shorted the stocks would be so great that they would be compelled to buy back the stocks to close their short positions. This would increase the demand for the stocks, thereby exerting further upward pressure on the prices. This theory rests on a basic supply and demand assumption: if the number of buyers for an asset increases while the number of sellers remains the same, the asset's price should rise. This mechanism is typically known as a "short squeeze". The surge in the price escalates the potential loss for those who have shorted the stocks, compelling them to buy back the shares to mitigate their risk, even if it results in a loss.²

¹ Actions aimed at artificially influencing the price of exchange-traded instruments could constitute prohibited market manipulation. The Securities and Exchange Commission (SEC) investigated the matter under American law, although the investigation did not lead to any actions.

² This is somewhat simplified. Often those who have shorted a stock trade on margin, which can be likened to borrowing money to trade and needing to pledge collateral or

Fact Box – Going short in a stock

Short selling a stock entails selling shares that the seller does not actually own with the expectation that the stock will decrease in value. The seller borrows the shares, or makes sure they can be borrowed, and sells those shares with the hope of buying them back at a lower price later on. The potential profit is the difference between the selling price and the repurchase price. Below is a hypothetical example.

Example: Suppose I borrow 100 shares from my bank, each valued at SEK 10. I immediately sell these shares at market value, accumulating SEK 1,000. In a month, when I must return the shares to my bank, the price per share is now SEK 7. I repurchase 100 shares for SEK 700 and return them to the bank. Given that the repurchase cost was only SEK 700, I make a profit of SEK 300 due to the stock's decrease in value.

The risk lies in the possibility of the stock price rising over the month, which would result in a loss. If the price per share after a month is SEK 12, I would need to repurchase the shares for SEK 1,200, resulting in a loss of SEK 200.

The phenomenon garnered wide coverage from the media

In a study by Barber and Odean (2006)³, the authors demonstrate that individuals are more likely to invest in stocks that garner their attention either due to

- exceptionally high returns the previous day,
- unusually high trading volume the previous day, or
- recent news coverage.

These circumstances are consistent with the developments seen for both Gamestop and AMC, where the shares often fluctuated by more than 10 per cent in a single day. The trading volume was also unusually high, particularly for Gamestop, which was the most traded stock in the USA on January 27. The extraordinary trading volume and volatility of these shares, along with the underlying discussions in the Reddit group influencing price movements, attracted significant media coverage. These three factors likely drove the phenomenon.

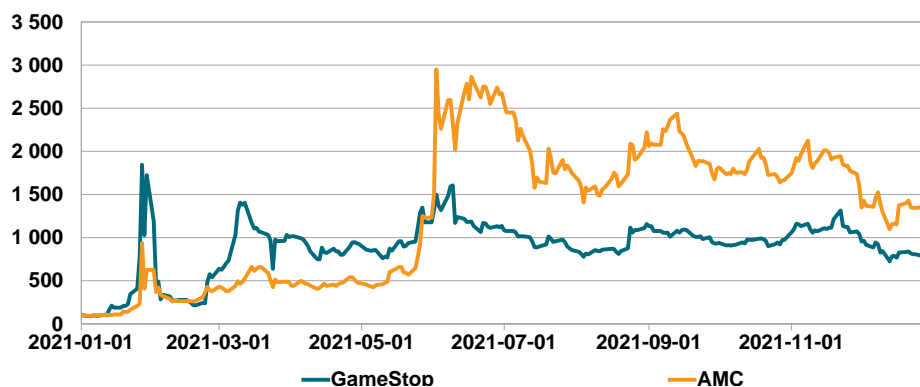
securities for this. Short positions become less valuable as the price rises – and the risk of loss increases – which means that the investor will need to provide more collateral to keep their positions. But, if the price continues to rise, there will come a time when it becomes too expensive for the investor to keep their positions and they will be forced to buy back the shares to close the short position.

³ For more information see Barber, B. and Odean, T., *All that Glitters: The Effect of Attention and News on the Buying Behavior of Individual and Institutional Investors* (2006).

As a result of the buying pressure exerted by members of the Reddit group, the stock prices of GameStop and AMC rose sharply in January 2021 (see Diagram 1). For Gamestop, the price increased from around USD 20 at the start of the year to a peak of USD 483 on January 28, 2021. The price has since fluctuated, but for most of 2021, the stock traded above USD 100⁴. Concurrently with Gamestop's most dramatic price changes, AMC's share price rose by nearly 1,000 per cent. Trading in AMC then became somewhat more stable until the end of May, when the price rose again.

1. Price performance of Gamestop and AMC

Index, 2021-01-01=100



Source: Refinitiv Datastream

The events in the market that transpired in January 2021 garnered substantial media attention, and this cluster of stocks soon earned the moniker "meme stocks". The term "meme" was originally introduced in the 1970s, signifying a method for packaging and transmitting information from person to person. More recently, within the context of the internet, it has come to represent events and information shared online, often with a humorous twist. Reddit users frequently employed this term when discussing the unfolding events and the stocks themselves, which likely cemented the label "meme stock".

Regulatory authorities in other countries, such as the American Securities and Exchange Commission (SEC) and the Dutch Authority for the Financial Markets (AFM), have published reports investigating these occurrences. The SEC's report is notably technical, detailing both the sequence of events and the structural risks that emerged with this trading activity.⁵ The AFM's report primarily outlines the demographic and trading patterns of those who traded in Gamestop. It reveals that the traders were predominantly younger individuals who typically traded with relatively small amounts.⁶

⁴ The Gamestop share underwent a 4-to-1 split on 21 July 2022.

⁵ For more information, see the report Staff Report on Equity and Options Market Structure Conditions in Early 2021, October 2021, Securities and Exchange Commission (SEC).

⁶ For more information see the report Market Watch June 2021, third version, Autoriteit Financiële Markten (AFM).

Inspired by these reports, we utilised data from Finansinspektionen's (FI) transaction reporting system (TRS) to analyse Swedish investors' trading in these stocks. The objective of this analysis is to answer three questions:

- Who traded the meme stocks?
- Who incurred losses in the trading?
- Who benefited from the trading?

Providing answers to these questions offers valuable insights to better comprehend the consumer risks tied to highly speculative trading. Understanding who traded these stocks enhances our awareness of the risk-taking behaviours exhibited by different groups in the stock market. Furthermore, recognizing the outcomes of this type of trading promotes a deeper understanding of how investors react after purchasing such risky assets.

This analysis forms part of the FI's commitment to consumer protection and highlights the risks associated with trading instruments that are challenging to value. While trading shares always entails a degree of risk, this risk escalates when pricing in the instruments is increasingly driven by speculation. Meme stocks are a prime example of this, given the dramatic price movements primarily propelled by a somewhat coordinated group intent on inflating the price.

In investigating these questions, we have opted to focus on the stocks of Gamestop and AMC. The trading in Gamestop triggered the entire phenomenon that later became known as meme stocks. Consequently, our analysis is rooted in the trading of this stock. To gain a broader understanding and a comprehensive view of the meme stock concept, we also examine the trading in AMC.

We analyse the trading using the FI's transaction data

In this study, we employ transactions for individuals as reported to FI's transaction reporting system, TRS. We have elected to restrict the studied period to full-year 2021, which means all trading between 1 January and 31 December of that year. When we present results based on unrealised losses, we operate under the assumption that all remaining positions were sold at the closing price on 31 December 2021. Furthermore, we omit trading between individuals that did not conclude on the stock exchange. Due to a format limitation in TRS for individuals lacking a Swedish personal identification number, these individuals are excluded, hence the term "Swedes" in this analysis only refers to those with a Swedish personal identification number.

We have simplified the analysis by assuming that all investors pay the same fees. Transaction costs are assumed to be 0.125 percent for brokerage fees and 0.25 percent for currency exchange fees. This is a simplification, as transaction fees do vary among different operators and can also differ between customers of the same operator. For instance, individuals who trade frequently may be offered a lower brokerage fee.

Primarily younger men traded meme stocks

In total, 133,000 individuals traded Gamestop or AMC during the year, with about 90 percent of these being men. Among those who traded the stocks, 30 percent traded both Gamestop and AMC. In total, Swedish investors traded USD 2.86 billion in both stocks in 2021.

In 2021, Swedish individuals traded 7.75 million shares of Gamestop (see Table 1). The trading involved roughly 656,000 unique transactions and the total volume of all trading in Gamestop reached USD 1.26 billion. In 2021, 76,000 Swedish individuals traded Gamestop stock, and of these, 90 percent were men (see Table 1). Sapienza et al. (2009) suggest that men tend to be more risk-seeking, and thus more likely to make risky investments, which could account for why significantly more men traded the stock.⁷

One-third of those who traded Gamestop only bought a single share during the period. On December 31, 2021, Swedish investors owned 556,000 shares in GameStop. If these shares were valued at the closing price on the same day, the value would amount to USD 77.8 million, approximately SEK 700 million.

Tabell 1. Descriptive statistics of trading in Gamestop

Number of people, percentage

	All	Men	Women
Number of people who traded in Gamestop ('000)	75,9	68.1 (90%)	7.8 (10%)
– share that sold entire holdings (per cent)	73%	74%	62%
Share turnover ('000)	7,750	-	-
Number of unique transactions ('000)	656	-	-
Total traded amount (USD billions)	1.26	-	-

Source: FI's Transaction Reporting System

Note: The term "share that sold entire holdings" refers to people who, as at December 31, 2021, had no remaining holdings in the respective stock.

In 2021, 98,000 individuals in Sweden traded AMC shares, which is about 30 per cent more than those who traded Gamestop shares. The higher number of individuals trading AMC could be attributed to the generally lower price per share, making buying a single share less costly. Of those who traded AMC, 16 per cent

⁷ For more information, see Sapienza, P., Zingales, L. and Maestripieri, D (2009), *Gender differences in financial risk aversion and career choices are affected by testosterone*. Proceedings of the National Academy of Sciences (2009).

only bought a single share. Another reason could be the media interest that arose in connection with Gamestop, leading more people to seek a piece of the "anticipated" profits in what could become the next meme stock.

Swedes traded a total of 62.1 million AMC shares, valued at USD 1.60 billion, excluding brokerage fees, in 2021. The number of unique transactions in AMC amounted to 959,000 in 2021. That is roughly 30 per cent more than in Gamestop during the period. Men traded more money than women, and men's turnover was on average higher for trading in both Gamestop and AMC.

Tabell 2. Descriptive statistics of trading in AMC

'000, percentage, USD billion

	All	Men	Women
Number of people that traded AMC ('000)	97.6	85.1 (87%)	12.5 (13%)
– share that sold entire holdings (per cent)	69%	72%	53%
Share turnover ('000)	62,100	-	-
Number of unique transactions ('000)	959	-	-
Total traded amount (USD billions)	1.60	-	-

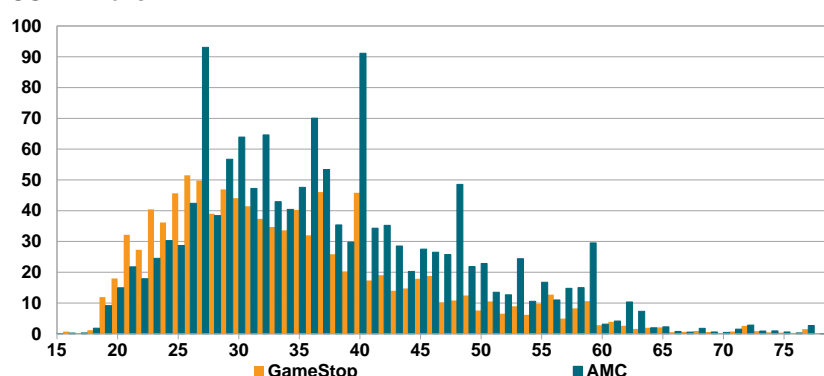
Source: FI's Transaction Reporting System

Note: The share that sold their entire holdings is defined in the same manner as in Table 1.

Individuals under the age of 35 accounted for 75 per cent of the trade in both Gamestop and AMC stocks (see Diagram 2). The average age of all traders was 31, with the median age being 29. The women were generally a few years older than the men. However, it is worth noting that those over the age of 45 traded larger positions and more shares, meaning that a smaller number of these older individuals accounted for a larger part of the turnover.

2. Gross turnover in Gamestop and AMC, grouped by age

USD millions



Source: FI's Transaction Reporting System

Note: A few people who traded were either under 15 or over 80. The total turnover among these individuals is less than USD 0.5 million.

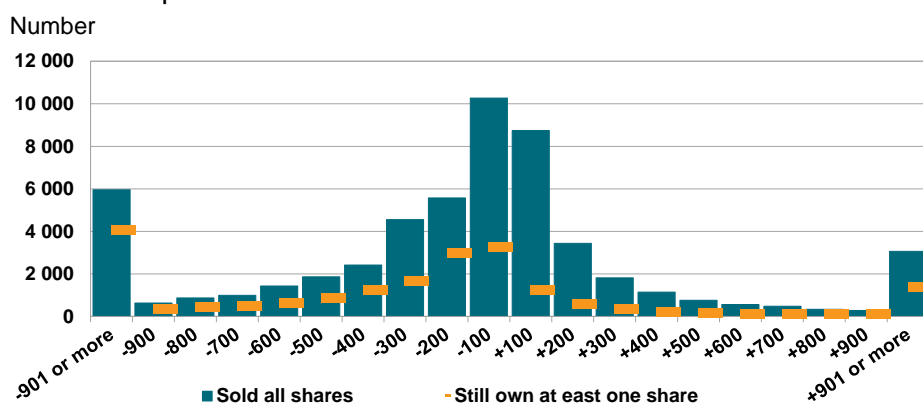
Most people lost money

By the end of December 2021, 73 percent of all individuals who traded Gamestop stock had sold their entire holdings (see Table 1, above). Of these, 63 percent incurred losses on their trades (see Diagram 3). Most individuals realised a result within the \pm USD 300 range. However, a significant number of individuals found themselves at the extremes of the distribution, indicating that they either made or lost substantial amounts of money. Among those who sold all their holdings, 11 percent lost USD 900 or more. For those who still owned at least one share in Gamestop at the end of 2021, we assume that 20 percent of these traders would lose USD 900 or more.

The total realised loss for Swedish private individuals came to USD 7.92 million, which, as at 31 December 2021, corresponded to approximately SEK 72 million.⁸ Losses, excluding transaction costs, were USD 4.78 million. Transaction costs were primarily driven by a few individuals who traded in very high amounts. This can be observed by looking at the average and median of the estimated brokerage costs. The average estimated fee paid per person was USD 55, while the median was USD 6.

Men experienced an average loss of USD 151 from trading Gamestop, while women lost an average of USD 63. The relative difference between women's and men's results does not differ significantly if unrealised losses are included in the calculation. This discrepancy may be explained by findings from Barber and Odean (2001), who determined that men are more likely to conduct a large number of transactions, which adversely affects their results.⁹ Men made an average of 8.7 transactions, while the corresponding figure for women was 7.0.

3. Gamestop: Distribution of results



Source: FI's Transaction Reporting System

⁸ Currency conversion SEK to USD was 9.0392 on 31 December 2021.

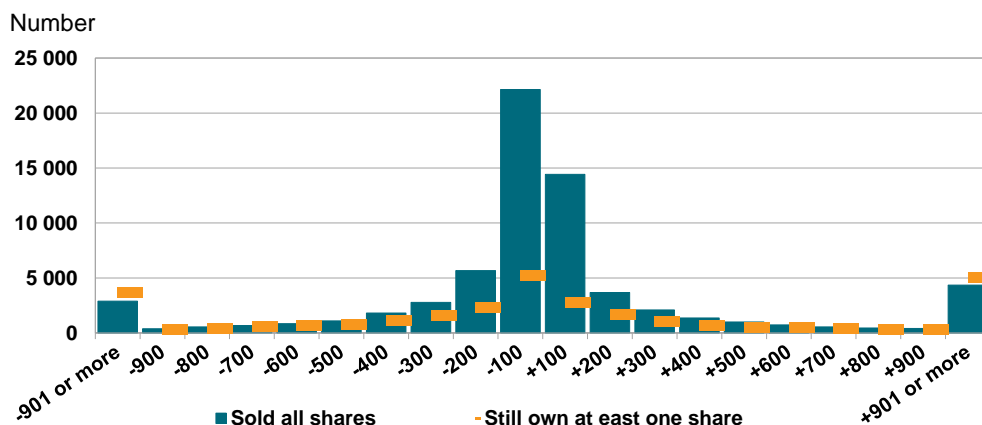
⁹ For more information, see Barber, Brad M., and Terrance Odean. *Boys will be boys: Gender, overconfidence, and common stock investment*. The Quarterly Journal of Economics (2001).

Note: The breakdown reflects either (green series) the realised outcome for the people who sold all the shares they bought in Gamestop or (orange series) the realised outcome plus the value of remaining shares that the individual still owns on 31 December 2021.

Similar to Gamestop, most individuals who traded AMC shares lost money. However, a notable difference between the outcomes in the two stocks is that the average for AMC is positive. The distribution of realised results for AMC traders is more even than that of Gamestop traders (compare Diagram 3 and Diagram 4). This suggests that most AMC traders either earned or lost smaller amounts. For instance, only 4 per cent of those who sold all their AMC holdings lost USD 900 or more, compared to 11 per cent for Gamestop. One possible explanation is that the average price of AMC was lower, hence the monetary gain or loss per share was also lower.

Among all those who traded AMC stock, 69 per cent had sold their entire holdings by 31 December 2021. Their total profit amounted to USD 14.8 million. Distributed among those who sold all their holdings, the average profit per person was USD 218. A breakdown between men and women shows that men earned slightly more on average than women, with the average being USD 222 and USD 186 for men and women, respectively. However, when we look at the median, irrespective of gender, it is clear that more than half of the individuals who sold all their holdings lost money on their AMC trades.

4. AMC: Distribution of realised results



Source: FI's Transaction Reporting System

Note: The breakdown reflects either (green series) the realised outcome for the people who have sold all shares they bought in AMC or (orange series) the realised outcome plus the value of remaining shares that the individual still owns on 31 December 2021.

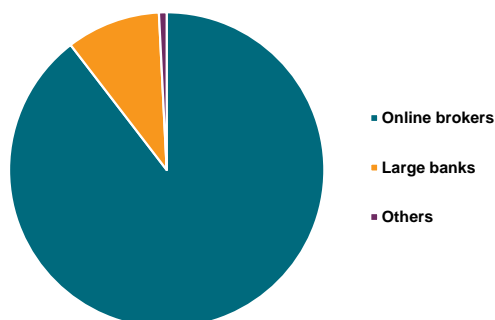
Stockbrokers made money from the increased trading

An examination of the platforms where investors traded meme stocks reveals that the majority of trading in both Gamestop and AMC occurred through online

brokers (see Diagram 5). This can likely be attributed to the fact that active stock traders tend to utilise online brokers more frequently. Additionally, younger individuals are generally overrepresented among the customer bases of online brokers, which may also explain why the majority of traders utilised these platforms.

5. Traded volume per institution group

Per cent



Source: FI's Transaction Reporting System

Note: Trading volume refers to gross turnover. The category "Online Brokers" includes Avanza and Nordnet. The category "Major Banks" includes Swedbank, Nordea, Handelsbanken, and SEB. The category "Other" includes Pareto Securities, Ålandsbanken, Erik Penser Bank, and Danske Bank.

Each time a stock is traded, a brokerage fee is paid to the institution that executes the order. Typically, the brokerage fee is relatively small – often less than 1 per cent of the traded amount. However, frequent trading can cause these costs to accumulate quickly. Since both Gamestop and AMC are American companies, their shares are traded in dollars. To facilitate these trades, brokers usually charge an additional currency exchange fee, which is often higher than the brokerage fee.

According to our assumptions about the total fees paid for trading in these stocks, the total cost for Swedish investors amounts to approximately USD 10 million, roughly equivalent to SEK 94 million. However, the fee structure varies greatly. There are significant differences between institutions, as well as within the same institution depending on the type of fee each customer pays. This variability can introduce some uncertainty in the data presented, which is based on calculations of individuals' net realised results. Nevertheless, the distribution of realised results should not be significantly affected.

The charging of fees by stockbrokers is a natural component of their business model. As an investor, however, it is crucial to understand the fees you are paying and how they may impact your savings. For instance, Barber and Odean (2000) provide compelling evidence that investors who trade more than necessary diminish their portfolio return due to the fees incurred with each transaction. Moreover, it is beneficial for customers to be aware of less apparent fees associated with different types of trading, such as the currency exchange fee incurred when trading instruments in foreign currencies.

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